

REMARKS

The Examiner maintains the rejection of claims 1, 2 and 4-6 under 35 U.S.C 103(a) in view of Kumura (US 2007/0036248) and Sato (US 7,142,587), and further in view of Junell (US 5,953,649) as to claim 6.

In response to Applicant's prior remarks, the Examiner states that the claimed subject matter "correlation of the received signal with a conjugate version of a delayed version of the received signal" is taught by Kumura, (Fig. 1, elements 3, 15 and 16; and paragraph 6).

In contradistinction to Applicant's claimed invention, as indicated previously, Kumura discloses a frequency offset estimator that produces a complex symbol sequence which is a product of an orthogonally detected complex demodulated symbol sequence and a conjugate complex number of a known symbol sequence. Applicant teaches away from this approach of using a known symbol sequence as taught by Kumura, since Applicant found that the resulting correlation magnitude varies depending upon the frequency offset, which may result in complete destructive cancellation resulting in FCB signal detection failure (pages 3 and 4). Therefore Applicant generates a reference signal from the received signal, the reference signal being a delayed version of the received signal, and then correlates the received signal with a conjugate version of the reference signal, i.e., a conjugate version of a delayed version of the received signal, to locate the FCB signal within the received signal.

Kumura specifically states in paragraph 6 that "[F]irst, complex multiplier **3** calculates a produce of orthogonally detected complex demodulated symbol sequence **1** [the received signal] and a complex conjugate of a known symbol sequence **2** corresponding thereto [reference signal]", with the product being "fed to differential detector **15** as complex symbol sequence **13**" where "[D]ifferential detector **15** delays complex symbol sequence **13** by several symbols using delay circuit **16**, and complex multiplier **3** [a second multiplier within the differential detector] calculates a product of a complex conjugate of the delayed symbol sequence, which have passed through delay circuit **16**, and original complex symbol sequence **13**." The resulting product is averaged to produce a frequency offset estimate. Applicant however recites that the received signal is delayed by a period "that is an integer multiple of one cycle of rotation

of the frequency correction burst signal”, i.e., not “several symbols” as taught by Kumura, to produce the reference signal. Therefore the reference signal of Applicant is not an external reference signal [the known symbol sequence of Kumura], but is related to the received signal itself. As recited by Applicant, the received signal is then correlated with a conjugate version of the reference signal to produce a correlation result “indicative of a location of the frequency correction burst signal within the received signal.” Kumura never produces such a correlation result indicative of the location of the FCB signal. Nowhere in Kumura is location of the frequency correction burst signal indicated as being desired. Kumura merely seeks to determine the frequency offset to sync receiver to transmitter, which frequency offset Applicant’s claimed invention eliminates in determining the location of the frequency correction burst signal within the received signal for use in synchronization. Thus claim 1 is deemed to be allowable as being nonobvious to one of ordinary skill in the art since neither cited reference teaches or suggests correlation of the received signal with a conjugate version of a delayed version of the received signal itself in order to determine location of the frequency correction burst signal within the received signal.

Since claims 2 and 4-6 depend from claim 1, deemed to be allowable, these claims also are deemed to be allowable as reciting significant additional limitations to those recited in claim 1.

In view of the foregoing remarks, allowance of claims 1, 2 and 4-6 is urged, and such action and the issuance of this case are requested.

Respectfully submitted,
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